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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Georgia Hilton

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Examiner: L. Grier

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For: GLOBAL VIRTUAL AUDIO PRODUCTION STUDIO

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Technology Center 2600

Assistant Commissioner for Patents
Washington, D.C., 20231

Response to Office Action

The following is in response to the Office Action mailed March 1, 2002.

The Examiner has rejected claims 4-8 as being obvious over Ludwig in view of LaMacchia.

Regarding claim 4, the Examiner states that Ludwig discloses a remote participant hold and disconnect during video conferencing. Ludwig discloses a plurality of multimedia workstations (which constitutes as audio workstations) for processing audio; IP and Non-IP based audio processing systems, with indication that the same and/or identical hardware, software, etc. may be used for the desired system; and indicates that the equipment is coupled via wiring/cable with the network location. However, Ludwig fails to specifically disclose the workstations as Digital Audio Workstations, with tactile work surface systems and matched audio consoles (herein, "DAW equipment").

Ludwig relates to video teleconferencing at the desktop in offices and homes with no specific acoustic or technology space. Col. 1 lines 22-28. It is designed to work in and with existing infrastructure and networks.

The present invention relates to multi-channel real-time audio recording, editing and mixing films, broadcast, video and music production located in specifically designed facilities. The present invention requires locations with specific systems and networking requirements.

Ludwig relates to video teleconferencing whereas the present invention relates to audio production and audio post-production.

Ludwig teaches adding multimedia and collaborative capabilities to the user's existing computer system. Col. 2 lines 36-39. The principal feature of Ludwig is desktop teleconferencing and multimedia mail. Col. 3 lines 4-7.

A collaboration session, whether real time or asynchronous, may include participants whose equipment provides capabilities ranging from audio only or data only to full complement of real time, high fidelity audio and full-motion video, and high speed data network facilities. Col. 3 lines 51-56.

Ludwig specifically teaches that the workstation system can be readily superimposed onto an existing infrastructure. Ludwig's plurality of multimedia workstations clearly discloses desktop workstations for home or office not dedicated to audio production other than for voice and or basic transfer of audio for a workstation based video teleconference system.

The present invention relates to the single use of multi-channel real-time audio recording, editing and playback.

Ludwig specifically states that the use and intent of the invention is for video teleconferencing specifically with the intent of utilizing existing infrastructure. Synchronization of audio and video has been known in the art for many years along with the networkable synchronization of such capability. The present invention improves on the prior art by allowing real-time isochronal multi-channel multi-location recording, editing and playback of audio with and without picture.

Regarding the DAWs, in a similar field of endeavor, the Examiner states that LaMacchia discloses a method and apparatus for synchronizing devices in an audio and video system. LaMacchia's disclosure discloses the use of digital audio workstations, wherein the tactile control surfaces inherently taught.

The Examiner states it would have been obvious to modify the invention of Ludwig by implanting a plurality or multiple number of DAWs with complementing accessories for the purpose of enabling an audio recording expert and/or engineers to manipulate and/or modify the audio data/equipment as desired for optimum performance wherein the DAWs are preferred in the art for other reasons disclosed by LaMacchia.

Regarding claim 5, the Examiner states that Ludwig further discloses means of interconnecting the equipment for interaction between the local and remote locations with a MLAN/WAN network system capable of high-speed audio and video data.

The present invention does not just disclose moving audio and video at high speeds. The present invention relates to the transfer of custom timing information, synchronization information, and command and control data including time stop and control information, all in real time.

Ludwig uses existing network technology, and the ability to move audio and video at high speed, as a platform. Ludwig uses these pre-existing interconnections as a vehicle for implementation.

The present invention includes moving audio and video, but adds a layered approach and the transfer of custom timing information, synchronization information, and command and control data including time stamp and control information, all in real time.

Regarding claim 6, the Examiner states that Ludwig discloses communicative interaction between the remote locations and further LaMacchia disclose the capabilities of the DAWs for performing audio manipulations.

Ludwig discloses capturing audio via microphones for input into a video teleconferencing system, then using echo suppression, audio/video transceivers, standard amplifiers, and equalizing circuitry to manipulate the signal to allow for better audio transmissions. The present invention relates to high speed, real time unmodified audio running locked or unlocked to video in order to edit sound in real-time from multiple locations as a coherent virtual single location. The use of echo suppression and other sub-systems in the audio chain to clean and manipulate audio between locations does not work in a studio situation where all facilities must hear the audio exactly the same, with no changes between facilities.

Ludwig teaches video conferencing utilizing existing infrastructure from office and home. The present invention relates to moving audio and video, but also adds a layered approach and the transfer of custom timing information, synchronization information, and command and control data including time stamp and control information, all in real-time.

Ludwig specifically teaches that the workstation system can be readily superimposed onto an existing infrastructure. Ludwig's plurality of multimedia workstations clearly teaches desktop workstations for home or office not dedicated to audio production other than for voice and or basic transfer of audio for a workstation based video teleconference system.

The present invention is setup and configured for the single use of multi-channel real-time audio recording, editing and playback.

Regarding claims 7 and 8, the Examiner states that Ludwig discloses a high speed network facilities with routers, network hubs (DATA MLAN hub), cable and/or UTP wiring, interconnection between multiple networks, and the WWW and IP capabilities as well as audio and video servers (with A/V switching circuitry AVNM-63) to support the plurality of DAWs and consoles.

Ludwig teaches high-speed routers and network hubs along with UTP wiring and interconnections between networks, as well as use of IP as a routing system which shows that the system of Ludwig does not relate or teach the system of the present invention. The present invention teaches IP as a basic network path, but then adds the use of ATM networks and DWDM fiber connects for high speed networking. IP and router based systems will not support the system of the present invention. The present invention includes moving audio and video, but also adds a layered approach and the transfer of custom timing information, synchronization information, and command and control data including time stamp and control information, all in real-time. Ludwig's ability to allow remote hold and disconnect of a video teleconference session does not relate to the present invention.

LaMacchia relates to a method of locally synchronizing an audio/video system within a single location using SMPTE timing and clocking standards. LaMacchia discloses the use of a Digidesign Video Slave drive as one such synchronization device.

Ludwig relates to a remote participant hold and disconnect during videoconferencing. The videoconferencing system and method comprises a plurality of workstations, providing AV capture and reproduction facilities, interconnected by a network providing an AV path for carrying signals and representing videoconference participants. The system and method includes one or more of a remote participant hold selection mechanism and a remote participation disconnection mechanism. The remote participant hold section mechanism is operable to place at least one of the other participants on hold, during a videoconference call among a hold-activating participant and a plurality of other participants. The remote participant disconnection mechanism is operable by a participant teleconference call among the participant and a plurality of the other participants without disconnecting the remaining participants.

Ludwig provides for a collaborative multimedia workstation (CMW) system wherein very high quality audio and video capabilities can be readily superimposed onto an enterprise's existing computing and network infrastructure, including workstations, LANs, WANs, and building wiring.

The system architecture employs separate real-time and a synchronous networks, the former real-time audio and video and the latter for non real-time audio and video, text, graphics and other data, as well as control signals. Networks are inoperable across different computers, operating systems and network operating systems. Both networks can share the same cabling and wall jack connector.

The system architecture also accommodates when the user's desktop computing and/or communications equipment provides varying levels of media handling capability. During collaboration person's equipment may vary. In the present invention, the systems are identical as described in the claim.

The invention shares a plurality of multimedia local area networks (MLANs) 10 connects via lines 13, a plurality of CMWs 12-1 to 12-10 and provides audio/video/data networking for supporting collaboration among CMW users.

The invention relates to real-time audio/video/data communication among geographically dispersed MLANs 10 via WAN 15 whereby communication delays, cost and degradation of video quality are minimized. Such WAN 40 comprises a router/codec bank coupled to WAN 15 via WAN switching multiplexer 44.

In the MLAN 10 to WAN 15 direction, router/codec bank 42 provides analog to digital conversion and compression of audio/video signals received from A/V switching circuitry 30 for transmission to WAN 15 via WAN switching multiplexer 44, along with transmission and routing of data signals received, from data LAN hub 25. In WAN 15 to MLAN 10 direction each router/codec bank 42 provides digital to analog conversion and decompression of audio/video digital signals received from WAN 15 via WAN switching multiplexer 44 for transmission to A/V switching circuitry 30, along with the transmission to Data LAN hub 25 of data signals received from WAN 15.

Audio input and output passes through A/V transceivers 840 and loopback/AV mute circuitry 830 in a similar manner. The audio input and output parts of add-on box 800 interface with standard amplifier and equalization circuitry, as well as an adaptive room echo canceller 814 to eliminate echo, minimize feedback and provide enhanced

audio performance when using a separate microphone and speaker. Use of adaptive room echo cancelers provides high quality audio interactions in wide area conferences.

Because adaptive room echo canceling requires training periods for alignment with each acoustic environment, it is preferred that separate echo canceling be dedicated to each workstation rather than sharing a smaller group of echo cancelers across a larger group of workstations.

Audio or video segments can exist without being accompanied by the other. If audio and video are recorded simultaneously, their streams are recorded and played back with automatic synchronization. This excludes the need to tightly synchronize separate audio and video sequences. Reliance is on the co-recording capability of the Real-Time Audio/Video Storage Server 502 to deliver all closely synchronized audio and video directly at its signal outputs.

LaMacchia relates to a method and apparatus for synchronizing devices in an audio video system. An audio video editing system includes a universal slave driver (USD) coupled between a timecode-producing device, such as a video tape deck, and a digital audio workstation (DAW). The USD includes a sample counter for counting the audio samples for each timecode frame, and a timecode reader to interpret the tape's location. An audio board of the digital audio workstation includes an identical sample counter. Both counters are driven from a common clock. A serial interface connection couples the digital audio workstation to the universal slave driver. One of the handshaking pins of the serial interface connection is used as a dedicated reset pin. When the dedicated reset pin is pulsed, the running sample counters in both the USD and DAW are set to a common value, typically zero. Resetting the sample counters at precisely the same time ensures that the DAW and the USD are operating in synchronization. Once the sample counters are set to a common value, an efficient binary protocol may be executed over the serial interface to determine the timing relationship between the sample counters and the beginning of a frame of the off-tape timecode from the videotape/audiotape recorder. The DAW need then only refer to it's own sample counter, and not to any timecode, to calculate a precise point to trigger playback.

Ludwig relates to a video teleconferencing system. Ludwig specifically relates to a remote participant hold and disconnect during video conferencing. LaMacchia relates to a method and apparatus for synchronizing devices in an audio video system.

LaMacchia uses an audio video editing system. The system uses a sample counter for ensuring that the DAW and the USD are operating in synchronization. There is nothing taught in Ludwig or LaMacchia to combine the references. One of ordinary skill in the art would not use the device in LaMacchia, a video editing system with the live teleconferencing system of Ludwig.

Applicant now believes the application is now in condition for allowance.

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Signature: 

Name: Maureen P. Herbst

PMW:mph

Respectfully submitted,



Philip M. Weiss

Reg. No. 34,751

Attorney for Applicant

Weiss & Weiss

500 Old Country Rd., Ste. 305

Garden City, NY 11530

(516) 739-1500